

THE PREVIOUSLY UNDESCRIBED FEMALE OF *DELIAS SHUNICHHI* MORITA (LEPIDOPTERA: PIERIDAE) FROM NEW BRITAIN, PAPUA NEW GUINEA

ROBERT I.C. GOTTS¹ and SCOTT G. GINN²

¹22 Dungara Place, Winnalee, NSW 2777

²22 Beechwood Parade, Cherrybrook, NSW 2126

Abstract

The female of *Delias shunichii* Morita is described and figured for the first time. The current placement of *D. shunichii* in the *nigrina* species group is discussed and observations are made on its morphology.

Introduction

The genus *Delias* Hübner is represented in New Britain by seven known species (D'Abrera 1990, Morita 1996). *Delias shunichii* Morita is the most recently described species.

Unlike mainland Papua New Guinea, the highlands of the Bismarck Archipelago are largely uninhabited and difficult to access. Therefore, butterfly taxa from this area, including the distinctive *D. shunichii*, are scarce in collections.

Between 1952, when Brandt collected in Rabaul and Keravat (Parsons 1998) and the 1960s-70s, when several expatriate Australian collectors (including H. Borch and R. Carver) were active in the area, very few *Delias* were caught in New Britain. One of us (RG) was resident in Rabaul from 1968 to 1972 but no reliable *Delias* collecting site was found until late in 1972. However, in mid-1972, a single specimen of an unusual *Delias* species (now recognised to have been *D. shunichii*) was observed but not captured at Raburua (50 m above sea level), near Rabaul. The species remained a mystery until Morita's (1996) publication. This prompted a search (conducted by correspondence and spread over a wide area), which has lasted for several years, culminating in the capture of a single female in late 2001.

Delias shunichii was described from a single male (Morita 1996). At that time the female was unknown. For purposes of comparison the male is redescribed here in greater detail, based on Morita's (1996) brief description and figures and additional, recently collected specimens. A detailed description of the single known female is provided below.

***Delias shunichii* Morita**

(Figs 1-4)

Material examined. PAPUA NEW GUINEA (NEW BRITAIN): 2 ♂♂, 1 ♀, East New Britain Province, ~ 900 m, 21.xii.2001 (♀) & 2.xi.2002 (♂♂) (in R. Gotts collection).

Description. Male (Figs 1-2). Forewing length 32.5 mm. Head and thorax dorsally black; abdomen dorsally grey. Head, thorax and anterior portion of

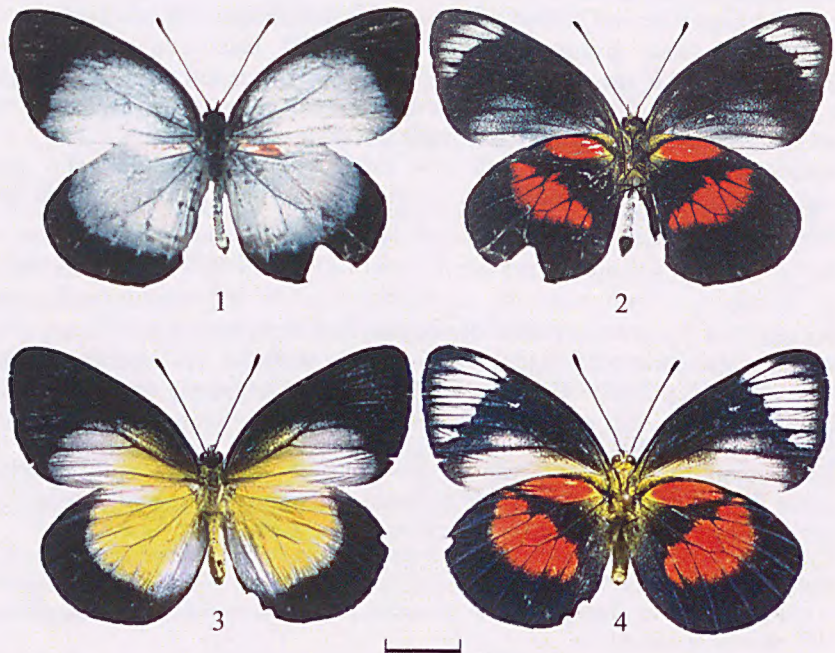
abdomen ventrally orange-yellow; posterior of abdomen white. Forewing upperside white tinged with grey distally; apex and costa black; outer margin to tornus broadly black but not entering discal cell. Forewing underside ground colour black, covering all but a narrow white strip along the inner margin (below vein 1A+2A); basal anterior lobe of costa edged with yellow; subapical band of 5 white spots. Hindwing upperside white with broad black margin extending into subterminal area. Hindwing underside black with large red sub-basal spot occupying most of cell Sc+R₁, yellow scaling present basally; broad red median band entering outer third of cell and extending slightly beyond, not reaching costa or inner margin.

Female (Figs 3-4). Forewing length 33 mm, antenna 15 mm. Head dorsally black, ventrally pale yellow; antenna black; labial palpus pale yellow; thorax clothed with pale yellow hairs; legs black, femora with yellow hairs; abdomen pale yellow. Forewing upperside ground colour white; basal one-third of white areas suffused with clear pale yellow; black margins broader than in male; black area very broad along costa almost completely filling discal cell, leaving just a narrow band of yellow with black dusting above cubitus; black margins on both wings grade to grey along inner edges; veins black; submedian area yellow, extending to origin of vein CuA₂; distad of CuA₂ white. Forewing underside ground colour black; broad submarginal band of six white spots extending from costa to vein CuA₂, much broader than in male and separated by black veins; small white disco-cellular spot present; posterior half of wing white extending from inner margin to cubitus, filling proximal third of cell CuA₁ and most of cells CuA₂ and 1A+2A; basal third of white area suffused with pale yellow scales; black border of outer margin ends at tornus and extends along veins. Hindwing with termen more convex than in male; upperside ground colour white; black margins broader than in male; white area suffused with yellow in basal half of cell Sc+R₁, and extending from vein Rs to 1A+2A, remaining white distally. Hindwing underside ground colour black; red sub-basal spot almost entirely occupies cell Sc+R₁; yellow scaling prominent in basal area, diffusing with black ground colour, and extending to proximal region of costa, sub-basal red spot and discal cell; red median band much broader than in male, with red areas more extensive distally; red median band commencing with vestigial spot in distal portion of cell Sc+R₁, then continuous from vein Rs to 3A and including distal third of discal cell; median band distally convex.

Early Stages. Unknown.

Discussion

The Bismarck Archipelago contains a significant number of endemic butterfly species. All Bismarck *Delias* species are endemic except *D. messalina* Arora and possibly *D. lytaea* Godman & Salvin (Parsons 1998), which are also known from the Solomon Islands. *D. shunichii* appears to be one of the endemic Bismarck species.



Figs 1-4. *Delias shunichii* from New Britain. (1) male upperside; (2) male underside; (3) female upperside; (4) female underside. Scale bar = 10 mm.

Talbot (1928-1937) divided *Delias* into 22 groups according to their genitalic and androconial form (Müller 2001). A further monotypic species group was proposed by Müller (2001) for the placement of *D. brandti* Müller from New Ireland. Morita (1996) suggested that *D. shunichii* should be assigned to the *nigrina* species group, based on morphological features (i.e. forewing upperside white with black margin, forewing underside black with white subapical band, hindwing underside with red sub-basal spot and red discal markings).

Superficially, *D. shunichii* does share some characteristics with members of the *nigrina* species group, particularly with *D. messalina*. The yellow colour of the female *D. shunichii* body and upperside wing surface is a close match with the colour of the abdomen and of the smaller yellow area on the upperside of the female of *D. messalina*, at least in the subspecies *D. m. lizae* Müller. *Delias shunichii* also displays features observed in members of the *belisama* group, such as the presence of a small white discocellular spot on the forewing underside and the red sub-basal spot of the hindwing underside.

The *nigrina* and *belisama* groups lack the consistent morphological features observed in most of Talbot's groupings, thus making the assignment of species to these groups more difficult, based solely on morphology. Therefore, while the present authors retain some reservations about the allocation of *D. shunichii* to the *nigrina* species group, there appear to be some grounds for retaining the present arrangement. The availability of additional male specimens will now enable the study of genitalia and androconial form, which will help establish the true position of *D. shunichii* within *Delias*.

As yet nothing is known of the life history of *D. shunichii*, but it is likely that its larvae feed on mistletoe (Loranthaceae), as is common and well documented for many species of *Delias*. Nor is it known whether it is a montane species appearing only rarely at lower altitudes, or if its habitat is in some other way restricted, but for whatever reason it is rarely encountered.

Acknowledgements

The authors thank Shane Dyke for providing the translation of the Morita paper from Japanese, Dr G. (Fred) Gerritts for bringing the Morita paper to our attention and Chris Müller for reviewing the manuscript.

References

- D'ABRERA, B. 1990. *Butterflies of the Australian Region*. 3rd, revised edition. Hill House, Melbourne and London; 416 pp.
- MORITA, S. 1996. A new species of the genus *Delias* from New Britain Is., Papua New Guinea (Lepidoptera: Pieridae). *Wallace* 2: 1-5.
- MÜLLER, C.J. 2001. A new species of *Delias* Hübner (Lepidoptera: Pieridae) from New Ireland, Papua New Guinea. *Australian Entomologist* 28(1): 17-22.
- PARSONS, M.J. 1998. *The butterflies of Papua New Guinea: their systematics and biology*. Academic Press, London; xvi + 736 pp, xxvi + 136 plates.
- TALBOT, G. 1928-37. *A monograph of the pierine genus Delias*. Parts 1-6. London; 656 pp, 71 plates.